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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,593	09/19/2005	Katsuhiro Fujimoto	1830.1012	1090
21171 7590 04/22/2009 STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005				
EXAMINER				
LEE, DORIS L				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/549,593

Applicant(s)

FUJIMOTO ET AL.

Examiner

Doris L. Lee

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 10, 2009 has been entered.
2. All outstanding objections and rejections, except for those maintained below, are withdrawn in light of applicant's amendment filed on February 10, 2009.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 3-4, 6, 12, 14 and 26** is rejected under 35 U.S.C. 102(b) as being anticipated by **Kelsey (US 6,093,786)**.

Regarding claim 1, 4 and 26, Kelsey teaches a polytrimethylene terephthalate composition (Abstract) comprising a polymer component (col. 2, lines 39-53) and Irganox 1098 (col. 3, line 52) which fulfills the structural requirements of Component C wherein more than 50 mol percent is composed of trimethylene terephthalate repeating units (col. 2, lines 39-53).

Regarding claim 3, Kelsey teaches that the hindered phenols are a color stabilizer (col. 3, line 60-63).

Regarding claim 6, Kelsey teaches that Irganox 1098 is N,N-hexane-1,6-diylbis[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionamide (col. 3, lines 45-53).

Regarding claim 12, Kelsey teaches that the hindered phenol (Irganox 1098) can be added directly to the polymer melt prior to solid stating (col. 5, lines 60-65).

Regarding claim 14, Kelsey teaches that the polytrimethylene terephthalaate composition of claim 1 can be made into a fiber or molded article (col. 6, lines 20-23).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 2, 9-11, and 15-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kelsey (US 6,093,786)**.

The discussion regarding Kelsey in paragraph 4 above is incorporated here by reference.

Regarding claim 2, Kelsey teaches that the amount of hindered phenol to the aromatic diacid monomer is from about 0.0005 mmol per mol of diacid to about 5 mmol/mol (col. 3, lines 53-60). It is also noted in the Examples in Table 5 that 0.05 to 0.1 wt percent of the hindered phenol is used in the composition.

Regarding claim 9, 10 and 11, Kelsey teaches a polytrimethylene terephthalate composition wherein more than 50 mol percent is composed of trimethylene terephthalate repeating units (col. 2, lines 39-53). Kelsey teaches that the remaining less than 50 mol percent may be polyethylene naphthalate (col. 2, lines 4-55).

Regarding claim 15, Kelsey teaches that the hindered phenols are a color stabilizer (col. 3, line 60-63).

Regarding claim 16, it is noted that component B is not mandatorially present in the composition.

Regarding claim 17, Kelsey teaches that component C is Irganox 1098 is N,N-hexane-1,6-diylbis[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionamide (col. 3, lines 45-53).

7. **Claims 1, 5 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Gross et al (US 6,569,958)**.

Regarding claim 1 and 5, Gross teaches a polytrimethylene terephthalate composition (col. 4, line 56) comprising a polymer component of homopolymer polytrimethylene terephthalate (col. 4, line 56) and at least one component selected from the group consisting of: a combination (col. 9, lines 65-67) of Component A (tetrakis(methylene (3,5-di-tert-butyl-4-hydroxy-hydrocinnamate))methane (col. 11, lines 9-10), also known as Irganox 1010 (col. 16, lines 34-37)) and Component B (Irganox 5057 which is a reaction product of N-phenylbenzenamine with 2,4,4-trimethylpentene, col. 12, lines 40-47).

Regarding claim 7, Gross teaches the addition of a thioester compound (col. 11, lines 50-63). Gross teaches that the amount of stabilizer can be from about 0.01 to about 5 parts by weight of stabilizer for each 100 parts by weight of resin and silicone elastomer (col. 12, lines 40-47).

It is the examiner's position that the amount of sulfur atoms with respect to the amount of trimethylene terephthalate repeat units is a result effective variable because changing them will clearly affect the type of product obtained. Changing the amount of the thioester will change the stability of the compound. See MPEP § 2144.05 (B). Case law holds that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In view of this, it would have been obvious to one of ordinary skill in the art to utilize an appropriate amount of sulfur atoms with respect to the amount of trimethylene terephthalate repeat, including those within the scope of the present claims, so as to produce desired end results.

8. **Claims 1, 7-8 and 12-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hartmann (US 2002/0054964)** in view of **Kelsey (US 6,093,786)**.

Regarding claims 1, Hartmann '964 teaches a polytrimethylene terephthalate composition ([0036]) comprising a polymer component ([0036]) and Irganox 1076 ([0026]) (which fulfill the structural requirements of Component A). It is noted that as Hartmann '964 elucidates polytrimethylene terephthalate in paragraph ([0036]), this is

taken to be a homopolymer of polytrimethylene terephthalate and thus meets the limitation of 100 mol % of the polymer is polytrimethylene terephthalate repeat units.

However, Hartmann '964 fails to teach that the specific component (I), (II) or (III) elucidated in claim 1.

Kelsey teaches a polytrimethylene terephthalate composition (Abstract) comprising a polymer component (col. 2, lines 39-53) and Irganox 1098 (col. 3, line 52) which fulfills the structural requirements of Component C or Irganox 1076 (col. 3, line 50) which fulfills the structural requirements of Component A.

In view of Kelsey's recognition that Irganox 1098 and Irganox 1076 are equivalent and interchangeable, it would have been obvious to one of ordinary skill in the art to substitute the Irganox 1076 of Hartmann '964 with the Irganox 1098 of Kelsey and thereby arrive at the present invention. Case law holds that the mere substitution of an equivalent (something equal in value or meaning, as taught by analogous prior art) is not an act of invention; where equivalency is known to the prior art, the substitution of one equivalent for another is not patentable. See *In re Ruff* 118 USPQ 343 (CCPA 1958).

Regarding claims 7 and 8, Hartmann '964 teaches that the composition further comprises a thioether ([0027]).

It is the examiner's position that the amount of sulfur atoms with respect to the amount of trimethylene terephthalate repeat units is a result effective variable because changing them will clearly affect the type of product obtained. Changing the amount of the thioester will change the stability of the compound. See MPEP § 2144.05 (B). Case

law holds that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In view of this, it would have been obvious to one of ordinary skill in the art to utilize an appropriate amount of sulfur atoms with respect to the amount of trimethylene terephthalate repeat, including those within the scope of the present claims, so as to produce desired end results.

Regarding claim 12 and 13, Hartmann '964 teaches a process in which the stabilizers are added to the polymer melt that during this addition, the components are mixed to form a blend ([0035]).

9. **Claims 2 and 15-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hartmann (US 2002/0054964)** in view of **Kelsey (US 6,093,786)** and **Hartmann (US 2002/0105108)**.

The discussion regarding Hartmann '964 and Kelsey in paragraph 8 above is incorporated here by reference.

Regarding claim 2, Hartmann '964 teaches the amount of each of the stabilizing agent is from 0.01 to 10 percent by weight of the phase composition and that the total amount of stabilizing agent is also from 0.01 to 10 percent by weight ([0033]), however Hartmann '964 fails to teach how much of the stabilizing agent is used in the polytrimethylene terephthalate ([0036]).

Hartmann '108 teaches phase compositions (Abstract) are used in a variety of polymers such as polytrimethylene terephthalate ([0048]) in an amount ranging from 5 % to 70 % ([0042]).

Therefore the total amount of the stabilizing agent ranges from 0.0005 % to 7% of the polytrimethylene composition. This overlaps the recited range of 0.001 to 0.2 wt % of the total composition.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the amount of phase composition as taught by Hartmann '108 in the composition of Hartmann '964. One would have been motivated to do so in order to receive the expected benefit of providing enhanced thermal properties (Hartmann, '108, [0022]). They are combinable because they are concerned with the same field of endeavor, namely polytrimethylene terephthalate with phase change materials.

It is the examiner's position that the amount of secondary hindered amine with respect to the amount of trimethylene terephthalate repeat units is a result effective variable because changing them will clearly affect the type of product obtained. Changing the amount of the secondary hindered amine will change the stability of the compound. See MPEP § 2144.05 (B). Case law holds that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In view of this, it would have been obvious to one of ordinary skill in the art to utilize an appropriate amount of secondary hindered amine with respect to the amount

of trimethylene terephthalate repeat, including those within the scope of the present claims, so as to produce desired end results.

Regarding claim 15, Hartmann '964 teaches that hindered phenol compounds are stabilizers ([0024]-[0025]).

Regarding claim 16, it is noted that component B is not mandatorially present in the composition.

Regarding claim 17, Kelsey teaches that component C is Irganox 1098 is N,N-hexane-1,6-diylbis[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionamide (col. 3, lines 45-53).

Regarding claim 18 and 19, Hartmann '964 teaches that the composition further comprises a thioether ([0027]) as recited in the rejection of claim 2 above, Hartmann '964 teaches the amount of each of the stabilizing agent is from 0.01 to 10 percent by weight of the phase composition and that the total amount of stabilizing agent is also from 0.01 to 10 percent by weight ([0033]), however Hartmann '964 fails to teach how much of the stabilizing agent is used in the polytrimethylene terephthalate ([0036]).

Hartmann '108 teaches phase compositions (Abstract) are used in a variety of polymers such as polytrimethylene terephthalate ([0048]) in an amount ranging from 5 % to 70 % ([0042]).

Therefore the total amount of each of the stabilizing agent ranges from 0.0005 % to 7% of the polytrimethylene composition.

It is the examiner's position that the amount of sulfur atoms with respect to the amount of trimethylene terephthalate repeat units is a result effective variable because

changing them will clearly affect the type of product obtained. Changing the amount of the thioester will change the stability of the compound. See MPEP § 2144.05 (B). Case law holds that “discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art.” See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In view of this, it would have been obvious to one of ordinary skill in the art to utilize an appropriate amount of sulfur atoms with respect to the amount of trimethylene terephthalate repeat, including those within the scope of the present claims, so as to produce desired end results.

10. **Claims 20-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hartmann (US 2002/0054964)** in view of **Kelsey (US 6,093,786)**, **Hartmann (US 2002/0105108)** and **Kurian et al (US 6,335,421)**.

The discussion regarding Hartmann '964, Kelsey and Hartmann '108 in paragraph 9 above is included here by reference.

Regarding claim 20-22, Hartmann '964 teaches that the polymer composition is a polytrimethylene terephthalate composition ([0036]), however, fails to teach that 10 to 80 % by mole of the polymer content is trimethylene terephthalate repeating units.

Kurian teaches a polytrimethylene terephthalate composition in which about 80 % or more are repeat units of trimethylene terephthalate (col. 3, line 65-67). Up to about 20 % of the polymer are repeating units of a polyester such as polyethylene naphthalate (col. 4, line 1-10).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the polytrimethylene terephthalate copolymer of Kurian as the polymer component of Hartmann '964. One would have been motivated to do so in order to receive the expected benefit of providing a polymer which has high strength, excellent plastic recovery and easy dyeability (Kurian, col. 3, line 14-18). They are combinable because they are both concerned with polytrimethylene terephthalate compositions.

Regarding claim 23 and 24, Hartmann '964 teaches a process in which the stabilizers are added to the polymer melt that during this addition, the components are mixed to form a blend ([0035]).

Regarding claim 25, Hartmann '964 teaches that a fiber can be formed ([0035]).

Response to Arguments

11. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Doris L. Lee whose telephone number is (571)270-3872. The examiner can normally be reached on Monday - Thursday 7:30 am to 5 pm and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571)272-1119. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Doris L Lee/
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796